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ABSTRACT

The Strategic Planning Evaluation of Curriculum Assessment of Performance (SPECAP) project was designed by Texas Tech University to assess the implementation of programs by 25 tech prep consortia in Texas. This report describes the most effective tech prep practices discovered by SPECAP through analyses of consortia planning and implementation documents, questionnaires and telephone interviews, and surveys of student satisfaction. Chapter 1 describes tech prep in Texas and identifies effects of the consortia on Texas education, while chapter 2 describes the SPECAP methodology as focusing on a loop between planning processes, curriculum modifications, and performance assessment. Chapter 3 focuses on exemplary practices related to strategic planning, indicating that successful plans ensure the long-term presence of committed partners, undertake environmental scanning, design flexible school or unit plans, effectively market the tech prep agenda, and internalize and institutionalize programs. Chapter 4 focuses on effective curriculum evaluation, indicating that evaluations should be on a regular basis, involve secondary and postsecondary personnel in the process, work with faculty to integrate standard competencies, and have business and industry representatives validate workplace skills. Chapter 5 describes such exemplary performance assessment practices as providing feedback to high school faculty about tech prep graduates' performance, asking for business and industry feedback, and assessing student satisfaction and accomplishment of goals. The final chapter discusses needs for the future regarding educational equity, excellence, efficiency, and partnerships. A list of consortia directors and a map of consortia are appended. (KP)

ED 387 177

THE TECH PREP HANDBOOK:

EFFECTIVE TECH PREP POLICIES AND PRACTICES

STRATEGIC PLANNING
EVALUATION OF CURRICULUM
ASSESSMENT OF PERFORMANCE

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ASSESSMENT OF PERFORMANCE

SPECAP

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Preface

The Editors of *The Tech Prep Handbook* are committed to providing a series of documents, knowledge, information and data that assists Tech Prep professionals.

The Editors are convinced after a comprehensive study of Tech Prep Consortia that the Tech Prep professionals are creating an emerging discipline that is leading the way in education innovation. They have a unique mission, a distinct body of knowledge, and special work that distinguishes them from a large group of educational and business associates. They have expressed a need for a number of exemplary documents that can guide specific transactions in their work. Tech Prep professionals see the importance for standards in strategic planning, the development and evaluation of curriculum, and the assessment of performance.

Currently, Tech Prep is a developing field with information and knowledge scattered throughout a large number of regional consortia, governmental agencies, special projects, and demonstration classrooms.

The Tech Prep Handbook is not a register of all documents, knowledge, information and data related to Tech Prep -- that is the function of a clearinghouse. Instead, the purpose of *The Tech Prep Handbook* is to publish exemplary documents, essential knowledge, select information, and data necessary to enhance the work of Tech Prep professionals. To achieve this purpose, we established an Advisory Board of Tech Prep stakeholders that meets quarterly, and we have established a series of liaison mechanisms with the Tech Prep Director Association and with the Tech Prep personnel in the field.

THE TECH PREP HANDBOOK: EFFECTIVE TECH PREP POLICIES AND PRACTICES

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Chapter 1

Introduction: Analyzing Tech Prep

The SPECAP comprehensive analyses have found that Tech Prep planning has had a direct, profound, and positive impact on Texas education, and that these plans are contributing significantly to advancing the economic development of the State by providing a competent and technically-educated workforce for Texas industry. Equally important is the fact that the Tech Prep Consortia are providing exemplary leadership in cooperative planning and implementation of educational reforms. The consortia are exemplary organizations that by the success of their activities have merited emulation and have gained widespread community support for previously unattainable reforms.

SPECAP is an externally funded, Texas Tech University project designed to assess Strategic Planning, Evaluation of Curriculum, and Assessment of Performance (SPECAP) of the Tech Prep Consortia and their associates. Through document analysis, SPECAP investigators have made a comprehensive study of the planning and implementation of Tech Prep programs covered in the 1992-93 Carl Perkins grant proposals submitted to the Texas Higher Education Coordinating Board. Proposals included planning systems from October of 1991 until June of 1995. Document analyses, consortia questionnaires, telephone interviews, and student satisfaction questionnaires, provide a wide range of evidence that ***all*** education in the State has benefited greatly through the careful planning and implementation of Tech Prep programs.

The document analysis of Tech Prep 1992-93 Implementation Proposals, the Strategic Planning, Curriculum Evaluation, and Performance Assessment Questionnaires, telephone interviews of partners conducted by the staff, and the Student Satisfaction Questionnaire have shown that the consortia are consistently achieving what they proposed to accomplish. Moreover, SPECAP's comprehensive analyses show that the Tech Prep Consortia are reforming education in its entirety by their successful examples of cooperative planning, enhancement of the curriculum, and rigorous assessment of performance.

The SPECAP telephone interviews with stakeholders provide evidence of the overwhelming, immediate successes of the consortia. The personal contacts by the staff lead them to conclude that the Tech Prep Consortia may be one of the most significant educational reform mechanism since the establishment of the Land Grant Colleges. Tech Prep Consortia are articulating the efforts of a very fragmented enterprise. The consortia continue to promote the independence of the local units, while creating specific partnerships that require a broad range of cooperation. After four years of operation, the consortia are perceived by students, parents, teachers, principals, governmental representatives, and business leaders as the change agents needed to introduce and institutionalize much needed educational innovation in the very separate and highly independent systems of the state.

Impacts on Texas Education

SPECAP investigations have identified the following main impacts on Texas Education:

1. **Tech Prep Consortia -- Exemplars for Solving Critical Education Problems.** The Tech Prep Consortia are important to education and the economy. Across the state these new, potent change agents have cemented historically fragmented social sectors into unified associates that have institutionalized carefully planned agreements. The planning, the formation, and the operation of the twenty-five Texas Tech Prep Consortia provide proof that previously separate and diverse sectors in a region can come together to plan and implement educational developments that benefit the student, industry, local communities, the State, and the Nation.

2. **The Target Schools -- Hosts for Tech Prep Experimentation and Innovation.** The target schools created articulated programs where college begins before high school ends. At this level the partnerships between education, business, and governmental entities become observable, active, and productive. These programs include multiple entry and exit points for both traditional and adult students.

3. **Tech Prep Students -- The Right Citizens for Critical Times.** Tech Prep programs prepare competent, skilled technicians who contribute significantly to the advancement of citizenship and the prosperity of the nation. Most importantly, the Tech Prep students prepare for careers in well-paying jobs that will increase pride in their work and enhance personal satisfaction.

4. **The Tech Prep Curriculum -- New Options/Opportunities for the Majority of Americans.** Tech Prep programs are offered in an ever expanding array of occupations. Each year programs are added and embedded further into the curriculum. Also, the orientation of the curriculum is changing from theoretical and purely academic to practical and applied. Programs become more expansive as formerly fragmented sectors join forces to establish a unified, holistic system.

5. **Performance Assessment -- Establishing Productivity Measures and Quality Standards.** Sponsors are keenly aware that Tech Prep is working. Through feedback, SPECAP is establishing that the sponsors' investment in technical education is being well spent and is beneficial.

6. **The Tech Prep Directors -- The Prototype for Educational Leaders of the 21st Century.** Innovative, creative, and dedicated to the philosophy and mission of Tech Prep programs, the directors' total commitment to fulfilling the charge of advancing technical education is a beacon to educators everywhere.

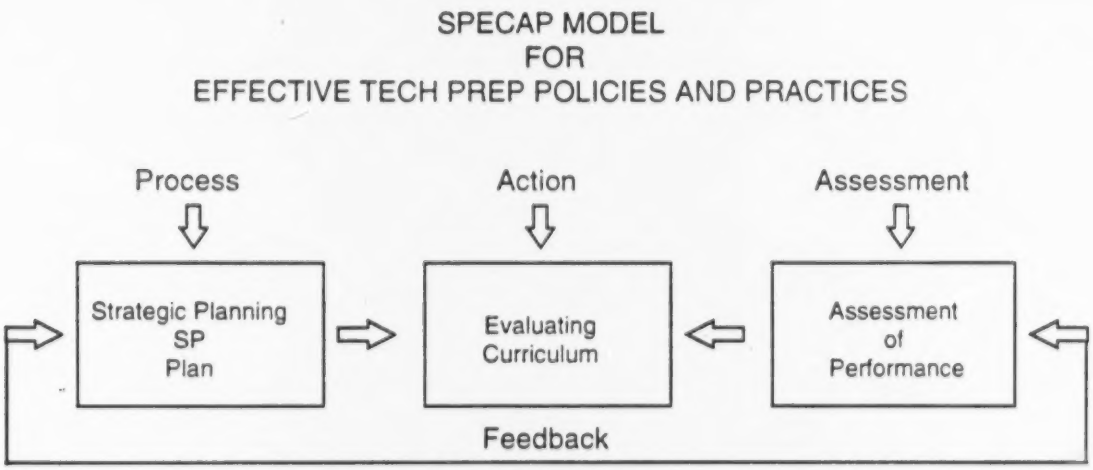
Evidence to support the aforementioned general conclusions and each of the major findings will be presented in considerable detail in Chapters 3, 4 and 5.

Chapter 2

What is SPECAP?

The Strategic Planning, Evaluation of Curriculum, and Assessment of Performance (SPECAP) project is built on the assumption that the organizational structure and the processes of effective Tech Prep programs can be first modeled, then characterized, next evaluated for effectiveness, and then the loop closed by feeding back curriculum evaluation and performance assessment information into the strategic planning process. The model guiding this research project can be found in Figure 1.

Figure 1. The SPECAP Model.



The Strategic Planning, Evaluation of Curriculum, and Assessment of Performance (SPECAP) Model is new and relies heavily on expert systems techniques for modeling the entire Tech Prep system. School-based and work-based faculty, who are the experts in the system, validate the structure and major processes of the systems as described by the SPECAP Theoretical Model.

The SPECAP model suggests that Tech Prep consortia begin their work by conducting a planning process to determine the means, objectives, goals, and strategies that they will follow in organizing and prioritizing the implementation of Tech Prep. Following the adoption of a planning document for the consortium, curricula for various Tech Prep programs are created or revised to fit Tech Prep concepts for effective vocational/technical programs. After development or revision of the curricula for Tech Prep programs, program curricula are evaluated by school- and work-based experts to determine their validity and effectiveness.

The information gleaned from the evaluation of program curricula is used by consortia and program members to implement changes in consortium and program planning to improve the effectiveness of program curricula. In a similar fashion, the performance of students, faculty, and consortium staff are assessed at appropriate intervals to determine the strengths and weaknesses of these key groups involved in Tech Prep. Based on this performance

assessment information, changes are implemented in consortium and program planning to improve the performance of these groups.

The SPECAP 1994-95 comprehensive analyses were developed to determine what type of impact Tech Prep planning and implementation was having on both education and economic development within the State of Texas. Was it providing a competent and technically-educated workforce for Texas industry?

The first stage of the SPECAP 1994-95 comprehensive analyses was a review of the twenty-five consortia's Carl Perkins 1992-93 Tech Prep Implementation Proposals to determine the extent of the Consortium's planning for the development of a regional Tech Prep consortium, evaluation and enhancement of the local schools' Tech Prep curricula, and assessment of performance. Exemplary planning processes and system components were identified which can serve as demonstration sites for superlative Tech Prep programs.

The Consortia Questionnaires were developed to obtain empirical data about policies and practices presently being used by Tech Prep consortia in each of the three areas of interest: strategic planning, curriculum evaluation, and performance assessment. These Consortia Questionnaires were sent to persons representing each of the key stakeholder groups involved in Tech Prep: secondary faculty, counselors, and administrators; postsecondary faculty, counselors, and administrators; and business/ industry, labor and government representatives.

In conjunction with the distribution of the Consortia Questionnaires, each Tech Prep Director was asked to identify the consortia they rated as the most effective, again in each of the three areas of study: strategic planning, curriculum evaluation and performance assessment. A total of nine consortia were identified, three consortia in each of the areas as follows:

Strategic Planning: Capital Area, Central Texas, and West Central Texas
Curriculum Evaluation: Alamo, Concho Valley, and Panhandle
Performance Assessment: Coastal Bend, Golden Crescent, and Upper Rio Grande Valley

Key stakeholders from these nine consortia were interviewed by telephone to obtain details on exactly how these consortia implemented exemplary policies, practices and procedures.

At the heart of the Tech Prep planning is a group of stakeholders who are recipients, participants, and products -- the students. One way to assess the overall performance of the Tech Prep program is to determine the level of satisfaction experienced by the Tech Prep students. In an effort to determine this level of satisfaction, a student satisfaction questionnaire was sent to postsecondary Tech Prep students enrolled in Texas two-year colleges during the 1995 Spring semester.

Chapter 3

Strategic Planning

Tech Prep Consortia emerged as exemplars for cementing fragmented social sectors into potent change agents. The planning, formation, and operation of the twenty-five Tech Prep Consortia provide evidence that previously separate and diverse sectors in a region can come together to plan and implement educational changes that benefit the student, industry, local communities, the State, and the Nation.

The Tech Prep initiative has created for the first time a comprehensive series of regional consortia in Texas that have brought together the education, government, industry, and labor sectors for the express purpose of improving education in their region. These consortia are exemplary organizations in our society. Their influence reaches far beyond the educational enterprise and extends into business/industry and government. The resultant interaction causes all sectors to reconsider their planning, policies, and practices so that common, long-term goals of the community can be achieved.

The Tech Prep planning processes for the consortia have impacted the partners' internal planning and operation. The Tech Prep advisory councils are the "Architects" for Tech Prep's future. SPECAP analyses show that these advisory councils are planning the educational future for regions. Furthermore, the consortia staff are bringing the Tech Prep associates together to implement a wide variety of innovations and new programs. Tech Prep Directors emerge as facilitators for introducing Tech Prep programs and educational innovations.

The consortia have drawn heavily from the Quality Work Force Planning Committees (QWFPC) and from the expertise offered by business/industry in creating strategic plans. The secondary schools have followed the lead of the consortia and have introduced strategic planning in their own institutions. Similarly, business, labor, and government have seen the success of the consortium cooperative, long-range planning with their partners. The impact of the consortia on regional planning and institutional operations has been profound and positive.

3.1 Proposal Document Analysis

In analyzing the consortia's Tech Prep 1992-93 implementation proposals, SPECAP used the CUES checklist developed for this study. The CUES checklist established guidelines for evaluating the planning with regard to eight, dynamic processes: (1) positioning the architects; (2) scanning the environment; (3) analyzing strategic options; (4) designing school/unit plans; (5) marketing the agenda; (6) accepting the agenda; (7) adopting the agenda; and (8) and internalizing and institutionalizing programs [see Figure 2]. Although results will be discussed in this order, it should be noted, however, that this is a dynamic, interactive planning system and not a simple linear process.

Figure 2. Planning Processes.

1. Positioning the Architects
2. Scanning the Tech Prep Environment
3. Analyzing Tech Prep Options
4. Designing School/Unit Plans
5. Marketing the Tech Prep Agenda
6. Accepting the Tech Prep Agenda
7. Adopting the Tech Prep Agenda
8. Internalizing and Institutionalizing the Programs

An Interactive Model of Strategic Planning for Tech Prep Consortia

3.1.1 Positioning the Architects

The SPECAP analyses determined that Tech Prep Consortia, as provided in their proposals, were correctly positioning their architects. Each consortium had the assurance of the long-term presence of partners totally committed to developing Tech Prep.

To determine the architects, and therefore the style of structure being built, the consortium must start with a model of the planning structure and a long-term schedule for developing Tech Prep in light of the consortium mission. Once established, the structure must be filled with competent and enthusiastic individuals who then become the key developers responsible for the general planning of the consortium. For this reason, individuals were chosen for their knowledge, abilities, and personalities to be advocates, risk-takers and visionaries to champion Tech Prep.

For most consortia, there was a primary institution that supported early sponsorship and understood the role of sponsorship in planning and implementing Tech Prep articulated programs. Documents indicated plans for establishing a Tech Prep Advisory Committee or Steering Committee composed of key stakeholders from government, independent school districts, colleges, labor, and industry who would oversee the administration of the project. The Tech Prep Advisory (Steering) Committee (Consortium Board of Directors) was, by definition, representative of the stakeholders of the region. For example, in the Concho Valley Tech Prep Consortium, the QWFPC representation was instrumental in providing early leadership in many program planning activities.

In reading the proposals, a mental image emerged of the planned liaison structures between partners, associates, and affiliates. Key connections among and between individuals and existing groups, such as congressmen, state legislators, school board members, labor and governmental councils, coordinating boards, vocational advisory boards and councils, and school associations were frequently mentioned.

Many consortia established groups, committees, and task forces on multiple levels. Locally, for instance, committee membership drew representatives from across a diversity of entities and sectors. The Council of Governments (COG), Job Training Partnership Act (JTPA), Private Industry Council (PIC), QWFPC, Texas Employment Commission (TEC), American Association of Retired Persons (AARP), American Federation of Labor/Congress of Industrial Organizations (AFL/CIO), local chambers of commerce, major businesses and industries, the public independent school districts, Knowledge Evaluation Groups (KEGs), nearby two- and four-year colleges as well as universities provided representatives for consortia committees like Capitals'.

The proposals described the different levels as well as the responsibility each associate was given.

The planning teams consisted of integrated levels. To ensure a balance, the planning team was designed to have representation from all levels. The work of these planning teams was published in the form of policies and, more importantly, as outcome measures. Processes, often in the form of training workshops, were to make the stakeholders -- be they teachers, administrators, or board members-- aware of their responsibilities for planning the Tech Prep Program and developing specific occupational programs.

In addition to planning the educational opportunities for the students, there must be some format to assure that the advisors can and do assist the students in developing student career strategic plans. Plans often mentioned opportunities for prospective students and their parents to meet with previously successful students to evaluate for themselves the occupational benefits of Tech Prep. Also, many plans indicated opportunities for employer involvement by reviewing a student's career plans.

Furthermore, development of the programs and courses were found in curriculum planning teams at the school level. These boards and teams were responsible for building a Model of the Structure of Knowledge for each of the occupational areas as well as setting policy for developing student 2+2 (or 4+2) career plans. These designers of curricula were given the charge of integrating Tech Prep programs with established academic courses, and as Capital discussed, with current activities such as the Texas Council on Vocational Education public hearings, and the University of North Texas' discretionary grant on performance objectives. The paths developed by these architects would ultimately lead to degree or certificate programs. Moreover, these boards and teams were delegated the responsibility for constructing a performance assessment model that could be used to evaluate the accomplishment of goals within each area and sector.

3.1.2 Scanning the Environment

The proposals were analyzed for the thoroughness of their environmental scan to ascertain the needs and resources of the region. Generally, environmental scans commenced with a definition of the physical, political, and social characteristics of the region. Documents from the Lower Rio Grande provide an excellent example of defining geographic and political boundaries.

Using organizational charts and referring to the demographics of the region, the administrative structure of the consortium had to be defined and analyzed. Also, affiliate organizations helped support the mission of the consortium by providing needed facilities and services. These alliances epitomize the intent of Tech Prep to create strong partnerships among the sectors.

Viewing the consortium, its associates, and its affiliates as a single entity, an evaluation of the strengths, weaknesses, opportunities, and threats (SWOT) would be conducted. Once completed, the SWOT would reveal opportunities for sharing work or articulation agreements. Results from the SWOT could also be used to build mutual development plans, to strengthen the consortium, meet school needs, and serve the needs of the community.

Serious thought went into completing these scans, and some of the exemplary plans follow. Global demonstrated excellent initiative in obtaining computers for one of its programs

as well as identifying threats that may impinge on the project. Southeast Texas, listing their existing programs, mentioned that one of their school districts already has arrangements with a nearby hospital for clinical rotations for high school students. Brazos identified the current and future Employment Occupational Needs for the area, the State, and Nation using QWFPC Labor Market information and validating it through regional employers. Southeast Texas Consortium provided a comprehensive chart of consortium goals and objectives, integrated with current experiences, barriers, the purpose, and the payoffs. We have included it in Figure 3.

The Golden Crescent consortium conducted in-depth research on the historical and philosophical aspects of their region as well as a review of existing programs. The mission of the consortium and other organizations in the region were analyzed to identify possible partners and competitors. The resources of associates and affiliates were identified and considered for opportunities to share development efforts, facilities, equipment, and courses. In their goals, Golden specifies how existing work programs and those businesses and industries already hiring high school students will articulate their efforts.

There must be, as part of the strategic planning process, an evaluation technique(s) that would allow a Performance Assessment of the consortium to determine the effectiveness of its policies and practices. Coastal, from an operational and tactical standpoint, was very strong in presenting an analysis of all of its strengths, weaknesses, and opportunities. Upper East discussed problems with apathy, understaffing, and regional perceptions toward Tech Prep. The Lower Rio Grande Valley gave a thorough description of potential threats to their consortium, e.g., problems of image in the community, turf battles, reluctance to change, and negative attitudes of some teachers. The proposal went on to discuss weaknesses at the State level, e.g., differing standards for services for special populations, and lack of JTPA services for the seventh and eight grade. They went on to provide suggestions to eliminate or ameliorate weaknesses.

Issue: Implementation of technical program curricula throughout the three-county region of southeast Texas that includes Hardin, Jefferson, and Orange counties at the secondary level which are articulated with that offered at the two-year educational components of the Lamar University System				
Current Experience	Goals	Barriers	Objectives	Payoff
• The majority of secondary vocational/ technical programs offered throughout the region reflect tradition rather than innovation	• Technical programs currently being offered reflect most recent developments in training and technology; new programs are developed to anticipate regional employer needs	• Inertia of educational system; a vehicle that can effect rapid change without diminishing quality assurance has not yet been developed	• Provide educational systems with incentive to change; develop a vehicle that can effect rapid change that also provides quality assurance	• Secondary and postsecondary technical programs will reflect latest developments in technology and training; programs offered will be responsive to regional employer needs
• Enrollment in secondary technical programs throughout the three-county region is down; too many secondary students "drop out" before graduating	• Students enrolled in neither traditional college prep, nor traditional vocational track, enroll in secondary tech prep track which prepares them for work and/or college	• Perceived benefit of enrollment in secondary vocational or technical programs is insufficient to attract the interest of a majority of secondary students	• Utilize marketing strategies (and all available resources) to alter public perception of technical/ vocational programs to be congruent with the facts regarding current and future employment trends	• Majority of secondary students will be graduates of technical programs for which there is regional employer demand; fewer students will "drop out" if they perceive their education as important and relevant
• Students enrolled in secondary technical/ vocational programs who are also enrolled in academically-demanding, related coursework are the exception, not the rule	• All secondary students enroll in courses which fully develop their academic potential	• Majority of secondary students, especially those enrolled in technical/ vocational programs, do not perceive the need to enroll in academically challenging courses; most students are concrete learners who learn best by doing rather than by listening and reading	• Develop courses which teach academic skills through concrete, real world applications; implement the developed courses of "applied academics" at the secondary level; articulate the secondary technical curricula with the postsecondary curricula	• The level of academic achievement of regional graduates will improve; graduates of regional secondary schools will be more likely to succeed at the postsecondary level; the quality of the work force available to regional employers will be enhanced

Figure 3. Southeast Texas Tech Prep Consortium Goals and Objectives.

The proposals for Gulf Coast and Central Consortia cited numerous publications. Many consortia looked at a wide variety of factors to ascertain specific information. A scan of the history of the curriculum in the schools and partnerships with other organizations within the impact areas identified mutual areas of concern and philosophical orientations.

Exemplary practices are highlighted in proposals from the Alamo Tech Prep and Upper Rio Grande proposals. The Alamo Tech Prep Consortium reviewed their prior successes in the opening of their proposal. Upper Rio Grande described the history of its articulation programs with El Paso Community College, the Regional Planning Cooperative, and the PIC.

3.1.3 Analyzing Strategic Options

In the master plan, there was usually a description of how the consortium went about securing listings of occupational and target school options in the region. For example, the Alamo Tech Prep Consortium developed the consortium master plan, then a special needs task force developed the regional plan. Policy standards were set to determine how each decision element or prospectus for a possible collaborative project leading to a Tech Prep articulation agreement would be judged, while guidelines and samples of documents were described to show exactly what conditions the Tech Prep consortium considered pertinent for articulation agreements prior to final commitment to the partnership.

Some consortia, such as Concho Valley, made decisions across the board for each school and handed down information from there. Because employment statistics had indicated the potential for growth and earnings as well as ample job opportunities, Concho Valley purposefully designed a health program to be implemented in all seven of their Independent School Districts (ISD's).

Other consortia had a different approach. They would provide options and leave the details of implementation to the partners. The broad scope of options found in the consortia proposals was considerable, e.g., child development, nursing, criminal justice, food services, equine technology, cosmetology, bio-medical equipment technology, laser and electro optics, nuclear technology, aviation maintenance technology, real estate, and financial specialties. Gulf Coast proposed an aquaculture/marine technology program, in addition to chemical, environmental, and instrumentation technology programs. These appeared to be most appropriate considering the geographic location of the region.

How do they propose to go about accomplishing these feats? In Brazos Valley's member ISD's, competency-based standards for all disciplines are being adopted and students must pass an exit exam to earn credit. Also, Brazos Valley is initiating a Tech Prep awareness program that will encompass kindergarten through the ninth grade.

The Middle Rio Grande Consortium gives six to fifteen hours of college credit, held in escrow, for technical classes. South Plains has its students sign an agreement with the university for credit. Middle Rio's proposal also mentioned bringing guest speakers into the classroom to introduce different career options to students from kindergarten through sixth grade classrooms. South Plains suggests that career exploration begin in the fourth through sixth grades. School Decision-Making Packets for Option Analysis included samples of the Decision Elements, Prospectus, and Proposals required for Tech Prep Program Development as well as a discussion about sharing resources. The Panhandle Consortium even included a sample Articulation Agreement in their proposal.

To be successful, every partner must understand the role they are to fulfill. There must be clearly stated expectations of the Superintendents, Principals, Teachers, Supervisors, and Tech Prep staff. Fiscal matters were equally important. There must be an assessment of financial support options to include those involving business/industry, schools, private foundations, state, and local organizations. As income revenue would be an on-going concern, Heart of Texas developed a standing committee to discuss ways of acquiring financial support and looked to into the opportunities for funding from external sources; while North Texas discussed receiving a New Beginnings Grant.

Tech Prep consortia would consider different instructional and service delivery modalities. Proposals indicated that the feasibility of alternative delivery strategies such as Distance Learning and on-the-job training, in addition to or in lieu of regular classroom instruction, were considered. Many consortia creatively solved their delivery system dilemmas. South Texas planned to solve the problem of being an expansive rural community by establishing Instructional Support Satellite Centers in each school district. Gulf Coast wrote of establishing an interactive video broadcasting system within its consortium, using video disks to "standardize" instruction, and to improve instructional methodology in the classroom of key scientific principles. Middle Rio Grande discussed providing tapes from teleconferences like STARLINK, or a telephone-based toll-free network link TENET, or perhaps even a computerized bulletin board.

These Tech Prep programs had multiple entry-multiple exit points that encouraged students to progress in a 2+2+2 Articulated Program. The Southwest Texas Consortium included a very explicit model of its process, shown in Figure 4.

North Texas went so far as to describe plans on the magnitude of 1+1, 2+2, and 4+2+2 with all options in place. Concho Valley provided for specific student planning options focusing on the transition of students from school to the workplace. They developed Student Career Strategic Plans that included options for students through job shadowing, apprenticeships, plant tours, and mentorships. In order to offer a diversity of experiences for students, Gulf Coast incorporated field trips, internships, co-ops, mentorships, and summer jobs into their plans as well.

These multiple options require a system to monitor student progress in the Tech Prep Educational system. Through fortuitous circumstances (a ready, able, and willing programmer on staff), North Central Texas was able to create a custom designed database to monitor student progress. Upper East has a similar program using the Instructional Development and Communication System (IDCS). In addition to curricula development and course organization, it also tracks and records students' progress.

School Curriculum Enhancement Plans had to be considered in the context of changing resources and delivery modes. Because of the differing sizes of its ISD's, North Texas Consortium economically decided it would be better to create a joint school to share facilities and programs, and then worry only about busing and classroom schedules. Permian Basin considered concurrent enrollment, or "circuit" instructors. Models for new curriculum development techniques such as SPANS, SOCRATES, TIINS, FANTUS, curriculum guides, and disciplinary registers were considered. So were options for bringing teachers together for curriculum development and articulation. Gulf Coast mentioned updating its curriculum

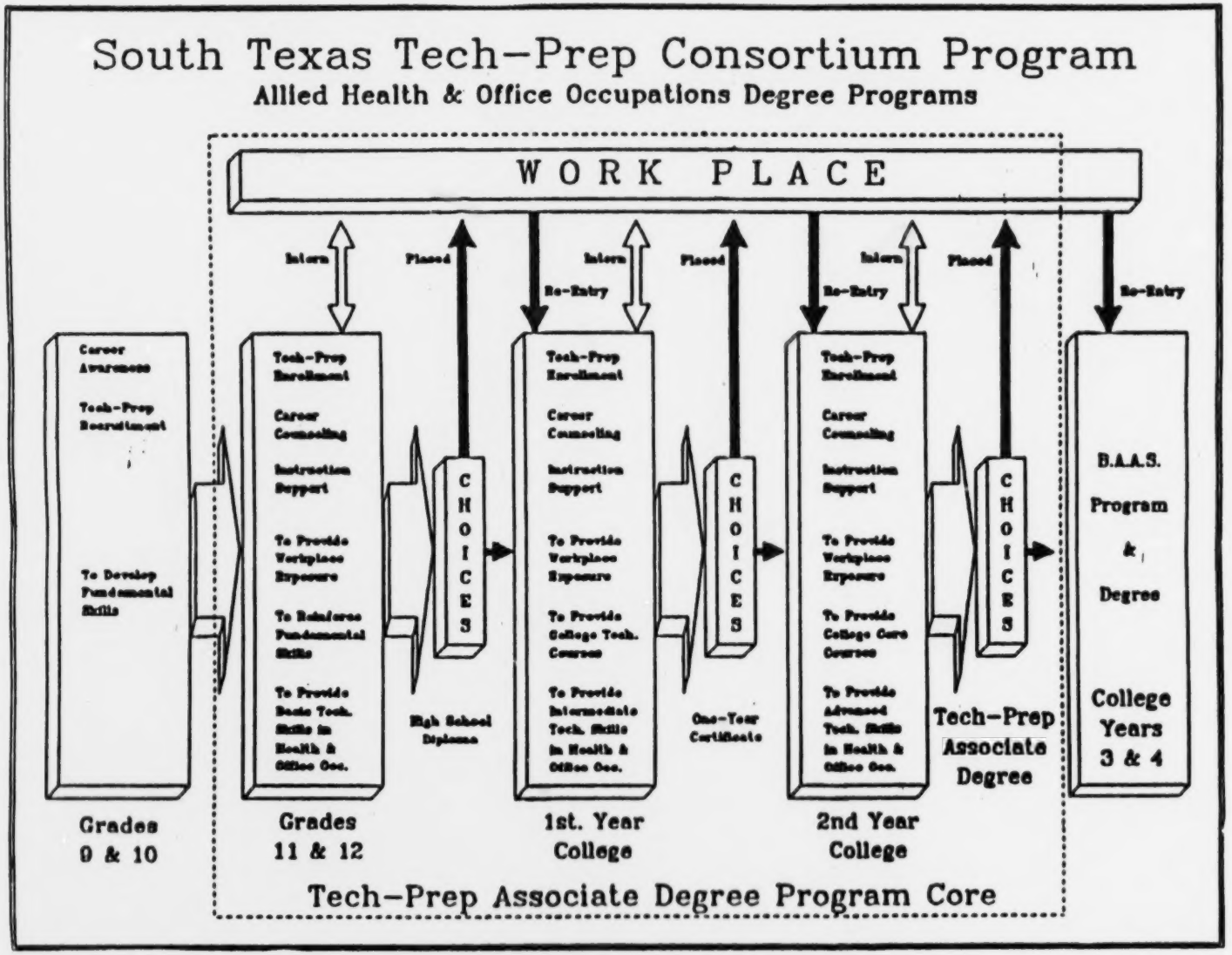


Figure 4. South Texas Tech Prep Consortium Program.

continuously to match the Governor's Employability Standards, as they are established. The Lower Rio Grande used the Texas Assessment for Supervision and Curriculum Development's "Project ABCD" for computer-managed electronic mathematics curriculum for pre-kindergarten through twelfth grade.

In addition, the development of Tech Prep Classes and Programs had to be considered in the context of realistic budgeting both today and in the future. Alamo Consortium was to ask JTPA for funding for workplace learning; Heart of Texas listed a goal to be self-sufficient after five years; and Global made a flat statement that schools and businesses would assume all funding after the initiation of the program. Good proposals considered all types of strategic views for budgeting.

However, budgeting was not the only complication. Basically, each proposal had to address a large number of options. Many consortia were like Heart of Texas when, in addition to the high school level, they developed a bridge program for adult learners, including a support system to understand problems related specifically to adult learning, and to identify when intervention is and is not appropriate. South Plains planned to implement an Adult Tech Prep program at the community college level so adults could return to school from multiple entry points. The costs and long-term outcomes for the various Tech Prep classes were considered in conjunction with the cost of regular classes, and the extended benefits and consequences of not performing Tech Prep were considered. Golden Crescent had a comprehensive list of expected outcomes of their Tech Prep program that exemplified the essence of Tech Prep.

3.1.4 Designing School/Unit Plans

The Consortium Tech Prep Proposal had to be directly relevant to the Tech Prep purpose and yet still give the schools and unit members of the consortium several options. Some consortia had a policy for each target school to develop its own project plan in the context of the general school systems program and to consider various options for Tech Prep Program Development and Maintenance, which was then reviewed and prioritized according to Consortium policy. The Lower Rio Grande spent energy developing course matchbooks for the college and university levels, and designed inverted degree plans for those same schools. The consortia established specific goals to be achieved and a time frame to complete those goals, and made a commitment for funding for the next period based on best estimates of funding available. They then considered additional funding and resources to further develop the Tech Prep program. More than one group, Central included, divided their task forces in specific areas to better define these goals. Task Forces included: (1) marketing; (2) professional development; (3) curriculum enhancement; (4) resource development; and (5) student services. Once these task forces were set-up, the areas of responsibility became more focused, and it is obvious in the proposals, that the goals became much more specific and much more achievable.

After consideration of the faculty prospectus for course development, each target school was to develop its own strategic plan based on a number of options. Faculty professional workshops were held to show stakeholders how to develop a unit plan, as well as how to develop prototype and demonstration classrooms for Tech Prep. Deep East Texas had a staff training so that a needs assessment for the program could be implemented. Some consortia gave the teachers the opportunity to have industry internships, and shadowing experiences. In addition to Global Area Consortium's five week training workshop, and its in-house training, it established workplace-based faculty development for interdisciplinary teachers, so that the curriculum could be more easily competency-based. Finally, the resulting school plan for articulating school programs was to develop 2+2+2 Tech Prep Models for each specific occupation and articulation agreements for certificate and degree programs, similar to those designed by the Southern Region Transfer Articulation Group of the Lower Rio Grande Consortium. This group made active progress with Texas State Technical College, University of Texas at Brownsville, and University of Texas Pan American, as well as establishing

articulation agreements with twenty-three high schools in the Lower Rio Grande Consortium service area. Upper Rio Grande even designated an articulation office to serve as a distribution center for materials. Each target school curriculum articulation plan was to include Packets of Decision Elements describing each Course or Project, and a description of established policy for the schools and businesses to accept the Student Strategic Plans for Career Development.

Some coordination of the school-to-work transition had to occur in both the school strategic plan and the student strategic plans for career development. Gulf Coast ultimately contracted with Palacios Economic Development Foundation for career placement services, in addition to a "Career Success Seminar Series" for students and a summer Tech Prep Career Institute. Students ultimately had to be aware of the Tech Prep education options and of their need to design their own student strategic plans for career development (and advancement), listing specific objectives, and a timing and funding commitment, with the parents' approval and supervision. A student career development model for each occupation shows teachers and counselors how to assist students in the preparation of student strategic plans for career development through a discovery package that explores career options, while on a more general, but visionary level, students are using registers of essential knowledge elements to design their student strategic plans for career development. In addition to the academic and Tech Prep classes, these student strategic plans also included other activities such as career sampling, cooperative education internships, apprenticeships, and/or school-based work.

The Tech Prep curriculum development plans had to be tied to consortium budgets with a policy stating the procedures for providing funds to unit plans and a prioritization system for developing and funding those plans.

3.1.5 Advocacy and Marketing of Tech Prep

For this program to work, there must be some type of personal advocacy and marketing plan to advance the Tech Prep agenda among local constituencies. This means that each stakeholder must attain a certain understanding level (see the Carl Perkins Act.). One of the most noteworthy attempts to achieve this is Gulf Coast's "Benchmark Tours", where the stakeholders are shown successful Tech Prep programs in both the state and nation. Other helpful factors in marketing Tech Prep include the director being a member of the Tech Prep Consortia (TPC) Directors Association, and making an effort to meet with applicable Boards of Education to explain the Tech Prep program, and the local cost and benefits of their adopting such programs using local moneys. The director is also responsible for calling on local business leaders to persuade them to allow a full range of career development and interning on the business premises, as well as to accept Tech Prep graduates. The Lower Rio Grande gave this responsibility to their local PIC's, by asking them to host seminars for business and industry to promote Tech Prep.

Among the school personnel, there must also be a comprehensive advocacy and marketing program for professional development, and a plan to gain acceptance using teachers as interns in Tech Prep positions in local businesses. The Heart of Texas consortium categorized professional development as six different activities: (1) increased understanding of the Tech Prep program; (2) an appreciation of competency-based education; (3) collaboration in curriculum modification; (4) effective delivery of Tech Prep in the classroom; (5) counseling and support activities; and (6) leadership in educational administration. Tech Prep Consortium Directors could also meet with teachers at in-service training programs to explain the opportunities for teachers to develop and deliver curricula and programs for Tech Prep, as was done in the Concho Valley Consortium. A summer institute training provided Golden Crescent teachers with technical assistance and training upgrades. Resource guide books or interactive computer programs easily assisted faculty with Tech Prep issues, as did a series of workshops to develop the skills of teachers in order to conduct Tech Prep programs.

Now that the framework has structural support, with familiar names and faces, there must be an advocacy and marketing plan to increase students' and parents' awareness of the

opportunities in Tech Prep programs in education, business, and government, through printed material, peer recruitment, and of course, a radio and/or television marketing program.

The strategic planning structure, the building, now has habitants. For growth, however, there must be a plan for advocating and marketing the curriculum articulation agreements among all the stakeholders in the region, perhaps even by bringing them together to discuss the Tech Prep program and course articulation. Included in this group are the public schools, community colleges, and four-year institutions that need to blend together to develop curriculum registers that include articulated courses, and plans for advocating college acceptance of advanced placement courses. Gulf Coast Consortium already had plans in place with Corpus Christi College, and the University of Houston, to do just that. East Texas has already filed three hundred and fifty course articulation agreements.

3.1.6 Accepting the TPC Agenda

The mission statement for each consortium matches the Tech Prep mandate and reflects the need for Tech Prep education, clearly stating the purpose and current intent of the work of the organization and its members in a way relevant to the region and to the contemporary world. Upper East's mission statement is exemplary.

These mission statements, like Upper East and North Texas, provide a good straightforward thinking mission with general goals. They also provide a general charge that allows the consortium to extend its efforts into unexplored areas, identifying Tech Prep education as a guide for the consortium to focus attention on common interests, with evidence of long-term commitment. They listed the numbers of their special populations including the economic and educationally disadvantaged, those lacking English proficiency skills, and foster children and school age parents. Tech Prep is helping these people!

In order to make this easily accepted, the philosophy statement must quickly identify the major functions that the members of a consortium perform, and suggest a way to develop these functions, addressing primary modes of inquiry to be used by consortium members and each member's responsibility to develop curriculum in the targeted knowledge fields and to recruit students into their school's target programs. As Panhandle wrote in their implementation proposal:

> Nothing the magnitude of Tech Prep has ever brought together . . . (a lengthy listing of an amazing assortment of groups) . . . as has this Tech Prep program. . . . the goal of this consortium will consistently remain that of working together to provide a seamless relationship between secondary and post-secondary Tech Prep. . . (p. 7).

The implementation proposals included an agenda complete with goals, performance measures, and time requirements. Coastal gave one general goal, with ten objectives to form a strong mission and philosophy statement, with some aim at strategic planning. One timeline that the SPECAP staff thought was very comprehensive and very straight-forward was the timeline from Northeast Texas Consortium. We recreated this chart in Figure 5.

Once the patterns were established, it was necessary to examine the funding sources. Central was quite optimistic about looking forward to the program being self-sufficient. Global was pointedly frank in its direction - it stated in its implementation proposal that the funds were to be primarily used to start new programs, and afterwards, the budgeting would be assumed by the independent school districts. Brazos Valley discussed implementing a new program at Blinn College in years two through five.

They also discussed that most of Blinn's current offerings have been established and maintained by local funding and significant employer contributions.

3.1.7 Adoption of the Agenda

So the consortia have built the foundation, and the programs are beginning. Now the question remains as to how deep the planning went and how closely it matched the philosophy behind Tech Prep. Many saw the Tech Prep initiative as a means of further funding their current vocational education programs, while others saw the Tech Prep initiative as a method of bringing about long-term change in the educational sector.

Capital did an exceptional job in showing strategies for school implementation and in developing a plan to determine if the career awareness and follow-up activities were appropriate to their purpose. Panhandle Consortium planned to evaluate their students through a MAP system. Here is one of Tech Prep's most common fears, solved in a positive, merely problematic statement, in writing from Heart of Texas's proposal: "Teachers will discover how not to sacrifice academic integrity in meeting the learning needs of Tech Prep students" (p. 17).

The Deep East Consortium designed an evaluation plan chart, including monthly, quarterly, mid-year, and final reports that helped the stakeholders to follow the development of programs in the local schools and cooperative institutions of higher education.

Figure 5. Re-creation of Implementation Timeline for Northeast Texas Consortium.

TECH PREP IMPLEMENTATION TIMELINE

GOAL	J 1	F 2	M 3	A 4	M 5	J 6	J 7	A 8	S 9	O 10	N 11	D 12	J 13	F 14	M 15	A 16	M 17	J 18	Year 3	Year 4	Year 5
6.2 A-2	O	O																			
6.2 B-1			O	O	O	O	O														
6.2 B-2		O																			
6.2 B-3			O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O			
6.2 B-4				O	O	O															
6.2 B-5									O	O	O										
6.2 C-1			O																		
6.2 C-2				O	O																
6.2 D-1									O	O	O	O	O	O	O	O	O	O	O	O	O
6.2 D-2						O	O														
6.2 E-1			O	O	O				O	O	O	O	O	O	O	O	O		O	O	O
6.2 E-2			O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
6.2 E-3	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
6.2 F-1		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
6.2 G-1																			O	O	O
6.2 H-1			O		O			O									O		O	O	O
6.4 A-1						O															
6.4 A-2																			O	O	O
6.4 A-3									O	O	O	O	O	O	O	O	O		O	O	O
6.4 A-4						O													O	O	O
6.4 A-5																			O	O	O
6.4 A-6									O	O	O	O	O	O	O	O	O	O	O	O	O
6.4 B-1						O												O	O	O	O
6.4 B-2					O			O									O		O	O	O
6.4 C-1						O												O	O	O	O
6.4 C-2						O												O	O	O	O

3.1.8 Internalizing and Institutionalization

The Tech Prep programs have been doing a lot more than making mere surface changes. According to the Upper Rio Grande Consortium,

> . . .this project will provide a model for cooperative efforts between the resources of the legal/correctional community and the resources of higher education in addressing the problems of LEP and ESP students entering the fields of law enforcement and correctional science not being able to fully understand the English legal vocabulary and concepts needed for the Mexican/American border environment (p. 28).

A site visit to this area confirmed that this proposal was fully implemented.

In the Brazos Valley consortium, most of the current offerings at Blinn College have become so integrated into the community that they are now completely sustained by local funding and employer contributions. Upper Rio Grande did more than discuss sharing resources and funding sources; they listed two pages of donations that they received in the past year. When the community begins to contribute in this way, it is no wonder that model programs are instituted.

When Tech Prep programs are placed in the schools, and final adjustments are made, then the institutionalization begins. Gulf Coast discussed having student placement seminars, to assist students in preparing resumes', and other important job skills. Heart of Texas brought up an interesting concept. Part of the current school battle is retaining students. Therefore, it makes sense to evaluate, as Heart of Texas plans to do, the failures to determine those reasons that people dropout, such as family problems, difficulty with rigorous coursework, financial difficulties, and so on. The consortia planned to have the local school counselor follow-up on the identified problem. These are immediate and concrete examples of school institutionalization of Tech Prep initiatives.

3.2 Consortia Questionnaires

The Strategic Planning Questionnaire also found the importance of planning to the successful development of Tech Prep Consortia throughout Texas. Almost nine out of ten (87.9%) of the respondents to the Strategic Planning Questionnaire indicated that their consortium has a committee for planning, but the type of planning used varied among the consortia. All of the respondents indicated that their consortia surpassed the short-term (one year) operational planning of the means for achieving goals. Almost two-thirds (64.2%) of the respondents indicated that their highest form of planning is tactical planning (defined as longer-term planning, up to five years, of the means and objectives for achieving goals). More than one-third (35.2%) of the respondents indicated that their highest form of planning is strategic planning, defined as the longest-term plans (up to 50 years) covering the means, objectives, goals, and strategies for achieving the mission.

The majority (61.8%) of the respondents to this Strategic Planning Questionnaire characterized the degree of their involvement with the planning process in their consortium as either moderate or high. More than half of the respondents indicated that they have personally engaged in the following planning activities with their consortium: served on a planning committee (63.0%); provided information for a plan (60.6%); reviewed educational plans (59.4%); participated in professional development on planning (53.3%); used the plan to make decisions about resource allocation (50.9%); and updated the plan on a regular basis (50.9%).

3.2.1 Members Involved in Planning

A number of different stakeholder groups are involved in the planning process at the consortium level. The majority of respondents to the Strategic Planning Questionnaire

indicated that the following groups are involved in their consortium: the consortium director (89.1%); business representatives (78.2%); community college administrators (77.0%); high school administrators (74.5%); community college faculty (72.1%); government representatives (66.7%); high school counselors (63.0%); high school faculty (59.4%); community college counselors (52.7%); and labor representatives (50.2%). The high levels of involvement of business representatives in consortium planning is not surprising, given the expertise that many business leaders have developed in the area of strategic planning. The high presence of high school and community college administrators in consortium planning may also reflect their experience in planning, as well as the importance of Tech Prep consortia attaining their cooperation in any endeavor involving their institutions.

3.2.2 Opinions about Planning

While many activities associated with planning are valued, the respondents to the Strategic Planning Questionnaire particularly viewed three specific planning activities as "very important" or "essential", including: utilizing the plan to make decisions about resource allocations (86.7%); evaluating the plan (85.6%); and updating plans on a regular basis (85.4%).

The importance that respondents placed on evaluating and updating the plan underscores the importance that strategic planning has in the SPECAP model upon which this project is based.

3.2.3 Criteria for Evaluating Effectiveness

Similarly, the respondents identified three criteria that were most commonly used, or plan to be used, to evaluate the effectiveness of their consortium's planning, including: the number of approved Tech Prep programs (81.2%); enrollment growth in community college Tech Prep programs (79.4%); and the number of Tech Prep high school students (79.4%). Clearly, Tech Prep consortia are being held accountable for developing Tech Prep programs and increasing Tech Prep enrollments within their regions.

Respondents also identified what national and state factors were most often taken into consideration when developing consortium plans. The three most frequently mentioned factors include: workforce trends (84.8%); technological trends (83.6%); and state policy (81.2%). The consideration given to these factors reinforces the emphasis placed within Tech Prep programs on workforce development and advanced technology training.

In a similar fashion, respondents also were asked what local factors were taken into consideration when developing consortium plans. The three most frequently mentioned factors include: Quality Work Force Planning information (82.4%); needs of local business and industry (80.6%); and availability of existing technical programs (77.6%). The consideration given to Quality Work Force Planning information is not surprising, since consideration of such information is mandated in the regulations establishing Tech Prep consortia.

Finally, respondents were asked what internal factors were taken into consideration when developing consortium plans. The three most frequently mentioned factors include: fiscal resources (79.4%); existing education programs (78.2%); and current Tech Prep articulation agreements (78.2%). The consideration given to existing education programs and articulation agreements reinforces the importance that Tech Prep consortia place on utilizing existing programs and partnerships in developing Tech Prep programs.

3.2.4 Strategies for Planning

Respondents were asked to indicate what strategies they used in developing Tech Prep plans for their consortium. The three strategies used most often by respondents include: updating the plan on a regular basis (79.4%); evaluating the plan (78.8%); and developing partnerships with stakeholders (77.6%). The first two strategies underscore the importance

that the SPECAP model places on assessment and feedback to improve strategic planning. The development of partnerships, particularly between the business and industry and education sectors, is another key component of an effective plan to develop Tech Prep.

3.2.5 Open-Ended Responses

In reviewing the respondents' comments to the open-ended question on the strengths of their consortium planning process, two key factors emerged. One key factor is the involvement of as many different stakeholder groups as possible on the consortium planning committee. A number of respondents mentioned the high level of involvement of a diverse group of stakeholders in their consortium as the strongest single feature of their planning process. Clearly, having representatives on the planning committee from the secondary and postsecondary education sectors, as well as representatives from business and industry, labor, and government sectors, facilitates the building of partnerships between these sectors.

The other key factor in effective consortium planning is having a consortium director who is knowledgeable and committed to planning. A number of respondents mentioned the consortium director as the single most important person to the effectiveness of the consortium planning process. This fact underscores the importance of hiring consortium directors who are knowledgeable and committed to the planning process.

3.3 Telephone Interviews

Similar to the Strategic Planning Questionnaire's results, telephone interviews of exemplary Tech Prep programs' key stakeholders found that planning is valued as the important basis for developing a successful Tech Prep program. One interview participant noted that when the Tech Prep program was started, people didn't know about it, and getting it off the ground is critical. They indicated that a consortium that doesn't plan, doesn't get off the ground. An interview participant from the government sector strongly valued the need for planning and noted that "planning is more important than the actual implementation."

Interview participants identified several examples of evidence that their Tech Prep planning has been successful, including: additional funding to the region; human and financial support; and the development of vertical teams (K - 12) in disciplines, such as math. An interview participant from a Postsecondary School noted that there are many indicators including: the number of students and the number of school districts involved; the number of pathways that are available; the level of attendance and participation in the consortium meetings; and the number of articulated degrees.

Suggestions for ways to improve Tech Prep's planning process included: a coordinated state-wide system to track students, preferably electronically; the development of technological communications within a consortium; and the expanded participation of the sectors in the meetings.

Several aspects of Tech Prep planning were viewed as exemplary, particularly the involvement of all stakeholders, especially representatives from business and industry, and the creation within the school districts of a better understanding of the business perspective. One interview participant noted that each year, when a reapplication is submitted, a retreat is held to bring everyone together to provide input. Toward the end of the year, there is a recap of activities and achievements, and everyone is involved in the process of evaluation and planning.

Tech Prep planning is viewed as having improved the students' preparation for the workforce in several different ways. The knowledge of marketable careers, and the realization of the connection between school and what a job requires, are key components. Employers have expressed a preference for Tech Prep students because they have had a coherent sequence of courses, and are more motivated and focused on where they going in life.

This planning also has positively affected the relationships between educational sectors. What was previously non-existent or limited sharing of information between Secondary and

Postsecondary Schools in the past, has developed into a more professional and cooperative relationship. An interview participant from a Postsecondary School noted that "For years the word 'articulation' was heard but it usually meant that a sole individual would make contact with a single employer or a single course, and now it is a total effort."

The same is true of the relationships that have developed between the education sector and the business/industry, labor and government sectors as a result of Tech Prep planning. An interview participant noted that there is more natural respect among these sectors. Another participant from a Postsecondary School noted that there is a greater contribution being made to the curriculum and curriculum development by industry. Overall, additional on-the-job training and new programs that have developed as a result of Tech Prep planning have resulted in a closer relationship between education and business/industry.

Almost all of the interview participants agreed that most of the partnerships that have developed between sectors are a result of the facilitation provided by the Tech Prep Consortia. One interview participant acknowledged that what were previously fragmented approaches have become more organized through the Tech Prep Consortium. "We're an umbrella, everybody gets to benefit." Another interview participant noted that because representatives from different sectors participate in Tech Prep meetings, contacts develop that were previously non-existent. "Businesses didn't realize what we are doing. Now being in Tech Prep they can look at their needs and see what we have to offer them."

An interview participant from government noted that "the quickest and easiest way for employers to buy into the system is through the planning process . . . Our Tech Prep is the most forward thinking group in which I've ever had the privilege to participate."

In many instances, the efforts of the Tech Prep directors were viewed as instrumental in developing these partnerships, either serving as a cheerleader, or as a "go between who did all the groundwork to open communications between sectors", or as the one who "sold partnerships to high schools and community colleges."

3.4 Exemplary Strategic Planning

Consortia with exemplary strategic plans exhibit the following common characteristics:

- They incorporate in their strategic plans eight dynamic, interactive components: positioning the architects; scanning the environment; analyzing strategic options; designing school/unit plans; marketing the agenda; accepting the agenda; adopting the agenda; and internalizing and institutionalizing programs.
- The consortium director is knowledgeable and committed to the planning process.
- There is joint involvement of secondary and postsecondary personnel in the strategic planning process.
- Business and industry, government and labor representatives are actively involved in the strategic planning process.
- Developing partnerships with stakeholders is a primary strategy in developing strategic plans.
- Growth in enrollments and growth in the number of Tech Prep programs are the primary criteria used for evaluating the effectiveness of strategic plans.

Chapter 4

Evaluation of Curriculum

Once Tech Prep consortia develop their plans, the curricula for various Tech Prep programs are created or revised to fit Tech Prep concepts for effective vocational/technical programs. In an effort to determine the validity and effectiveness of these newly developed or revised Tech Prep curricula, they should be evaluated by school- and work-based experts.

4.1 Consortia Questionnaires

While the Tech Prep programs are still relatively young, the Curriculum Evaluation Questionnaire found that many consortia already realized the importance of evaluating the Tech Prep curricula. A majority of the respondents indicated that consortium members evaluated the program curricula (72.4%), the overall curricula (69.5%), and the effectiveness of individual courses (60.1%). Evaluation of curriculum is clearly occurring at different levels within the majority of consortia.

Slightly more than two-fifths (44.2%) of the respondents to the Curriculum Evaluation Questionnaire characterized the degree of their involvement with the curriculum evaluation process in their consortium as either moderate or high. More than one-third of the respondents indicated that they had personally engaged in the following curriculum evaluation activities with their consortium: participated in professional development on curriculum evaluation (41.9%); and conducted site visits (34.0%). Three in ten of the respondents indicated that they had personally: served on a curriculum evaluation committee (32.5%) or assessed curricular effectiveness (30.0%).

4.1.1 Members Involved in Curriculum Evaluation

A number of different stakeholder groups are involved in curriculum evaluation at the consortium level. The majority of respondents to the Curriculum Evaluation Questionnaire indicated that the following groups are involved in their consortium: the consortium director (61.6%); community college faculty (57.1%); and business representatives (51.2%). Slightly less than a majority of the respondents indicated that various other stakeholder groups are involved in their curriculum evaluation process: community college administrators (49.8%); high school faculty (48.3%); and high school administrators (47.3%). The high levels of involvement of business representatives in curriculum evaluation is encouraging, given the perspective that business leaders have about the skills needed in the workplace. The small representation from the labor and government sectors, coupled with the virtual absence of high school or community college students and their parents, is a cause for some concern.

4.1.2 Opinions about Curriculum Evaluation

While many activities associated with curriculum evaluation are valued, the respondents to the Curriculum Evaluation Questionnaire viewed three specific curriculum evaluation activities as "very important" or "essential", including: assessing curricular effectiveness (84.5%); participating in professional development (76.3%); and conducting site visits (62.8%).

The importance that respondents placed on assessing the effectiveness of the curriculum underscores the significance of the curriculum evaluation component of the theoretical model upon which this project is based. Regular feedback about the validity and effectiveness of the curriculum is essential in order to know how Tech Prep curricula have developed and can be further enhanced.

4.1.3 Criteria for Evaluating Effectiveness

Similarly, the respondents identified three criteria that were most commonly used, or will be used to evaluate the effectiveness of their consortium's Tech Prep curricula, including: validation of competencies by business and industry (79.4%); granting of course credit by two-year colleges (65.0%); and the number of articulation agreements with two-year colleges (63.1%). Two of these criteria for evaluating curricular effectiveness refer to partnerships that have been developed between high schools and community colleges. Clearly, the respondents placed less emphasis on partnerships that have been developed between two-year colleges and four-year colleges in evaluating the effectiveness of Tech Prep curricula.

4.1.4 Strategies for Developing Curriculum

Respondents were asked to indicate which strategies they used in developing Tech Prep curricula for their consortium. The three strategies used most often by respondents include: integrating academic and technical competencies (64.5%); following SCANS recommendations (62.6%); and validating competencies by business and industry (62.1%). The need for integrating academic and technical competencies is considered one of the key assumptions of Tech Prep educational reform, and it is reassuring to see that it is also the top-ranked strategy for developing curricula among respondents to the Curriculum Evaluation Questionnaire.

4.1.5 Open-Ended Responses

In reviewing the respondents' comments to the open-ended question on the strengths of their consortium curriculum evaluation process, several key factors emerged. One key factor is the involvement of both high school and community college faculty in the evaluation of Tech Prep curricula. A number of respondents commented that bringing together high school and community college faculty to evaluate the effectiveness of curriculum is the strongest single feature of their curriculum evaluation process. Clearly, having secondary and postsecondary education faculty working together on evaluating curriculum facilitates the building of partnerships between these levels.

Another key factor in effective curriculum evaluation is having academic and vocational faculty working together to integrate competencies. Several respondents mentioned this partnership between academic and vocational faculty as a strength of their curriculum evaluation process. This working relationship between these faculty groups facilitates the incorporation of SCANS recommendations throughout the curriculum. This cross-disciplinary approach also enables academic and vocational faculty to bring different perspectives to the process of evaluating Tech Prep curriculum.

A final factor is the involvement of business and industry in the curriculum evaluation process. A number of respondents mentioned business and industry involvement as a major strength of their curriculum evaluation process. Having business and industry involvement helps improve the curriculum evaluation process, since representatives from this sector must validate the job skills competencies needed for the workplace. Such involvement also facilitates the building of partnerships between the education and the business and industry sectors.

4.2 Telephone Interviews

Similar to the Curriculum Evaluation Questionnaire results, telephone interviews of exemplary Tech Prep programs' key stakeholders found that curriculum evaluation is very important to the success of Tech Prep. An interview participant from a consortium indicated that curriculum development and evaluation are essential. Concho Valley schools did a thorough job task analysis and enhanced courses as needed, or developed new courses from scratch. Interview participants from both the secondary and postsecondary schools also highly

valued the importance of curriculum evaluation, both the need of a competency-based format to ensure quality, and the need to link it with economic development and the viability of the program.

An interview participant from business and industry indicated the importance of ***not*** teaching the students anything that is outdated. They felt that it would be a waste of time if the students weren't being taught something that is applicable. Another business and industry interview participant noted that curriculum evaluation is "most important". They noted that without the proper curriculum, the transfer from school to work or secondary to postsecondary will leave an impasse that must be addressed at the next level.

At this still young stage in the development of the Tech Prep programs' curricula, it is somewhat difficult to evaluate the overall success of the Tech Prep curriculum, but there are some specific examples of its success. One Tech Prep director indicated that a nursing home recently hired ten high school juniors in the Tech Prep nursing program; and that business leaders reported that the Tech Prep students have a positive work attitude and strong motivation to work. As a result, when the Tech Prep consortium recently sponsored a summer job fair with the Chamber of Commerce and the independent school district, businesses specifically asked for Tech Prep students. An interview participant from a secondary school noted that large numbers of high school Tech Prep students passed the TAAS test. An interview participant from a postsecondary school pointed out the number of students involved in Tech Prep at high schools, and noted that the high school faculty and advisory councils have developed a "meaty" curriculum, filled with competencies.

Suggestions for ways to improve the Tech Prep curriculum evaluation process include: longitudinal studies of Tech Prep students as they enter the workforce and postsecondary institutions; study how "at-risk" students perform in the Tech Prep program compared to "at-risk" students in the regular program; and the development of formalized surveys with business/industry, postsecondary sectors and families to find out if the students were well prepared and how they perform academically. Several representatives from different sectors pointed out the need to bring teachers together to further discuss and develop the curriculum. Interview participants from both business/industry and government suggested maximizing the involvement of business and industry in the process.

Several curriculum development teams were noted as exemplary by interview participants. In one instance, competencies were outlined, then taken to advisory councils, as well as reviewed with business and industry. An interview participant from a secondary school pointed out the time and opportunity that Tech Prep allowed teachers to meet together, and seven math teachers were funded to create an applied math curriculum. Interview participants from business/industry noted the effort that has been put into involving of business and industry with Tech Prep programs.

The evaluation of Tech Prep curriculum has improved the preparation of students for the workforce according to interview participants, for a variety of reasons. An interview participant from business/industry indicated that evaluating the curriculum and making suggestions as to its manner and content has brought the curriculum more into the realm of the real work experience. Another business/industry interview participant indicated that he prefers to hire Tech Prep graduates as employees, as the Tech Prep program has improved the workforce skills of students by providing them with job training skills.

Another major impact resulting from the evaluation of Tech Prep curriculum has been the development of a stronger relationship between secondary and postsecondary schools, in a wide variety of ways, and partnerships between the educational sectors have developed as a result. Communication has improved overall. Faculty from both educational sectors are meeting to discuss curriculum, competencies and textbook selection. One example is three institutions, which previously offered the same program, now have one program that is articulated. In another instance, math and science high school teachers met with health occupation faculty at a postsecondary school.

The same development of a stronger relationship between the education sector and the business/industry, labor and government sectors, are resulting from the evaluation of Tech

Prep curriculum. An interview participant from business/industry noted that what had once been a "stand off relationship" between education and business and industry, where each thought the other was not being responsive, has since developed into a spirit of cooperation due to Tech Prep. Examples of the development of partnerships between education and business/industry include: the validation of programs by business/industry; business leaders suggesting revisions to curriculum; the development of internship and job shadowing programs; business tours for teachers; guest speakers from business/industry coming into the classrooms; and the contribution of funds from business and industry to help purchase supplies and equipment to support math programs. While Tech Prep has resulted in increased involvement of business and industry on advisory committees, one interview participant from a postsecondary school noted that business and industry leaders also had become more aware of the role of community colleges in educating people for the workforce.

4.3 Exemplary Evaluation of Curriculum

Consortia with exemplary policies and practices for evaluating Tech Prep curricula exhibit the following common characteristics:

- The effectiveness of individual courses, program curricula, and the overall curricula are assessed on a regular basis.
- There is joint involvement of secondary and postsecondary personnel in the curriculum evaluation process.
- Academic and vocational faculty work together to ensure that SCANS competencies are integrated.
- Business and industry representatives are involved in validating the job skills competencies needed for the workplace.
- Developing partnerships with stakeholders is a primary strategy in evaluating curricula.
- The granting of college course credit and the number of articulation agreements, along with the validation of competencies by business and industry, are the primary criteria for evaluating the effectiveness of curricula.

The most important point brought out by the Curriculum Evaluation Questionnaire and the Telephone Interviews is the development of hundreds of school/industry access routes which are now daily allowing educators easy approaches to industry, and conversely are allowing a very positive industry influence to develop school programs and advance individual students.

Chapter 5

Assessment of Performance

Planning, development and implementation are three vital phases of a Tech Prep program. But the ability of the program to accomplish its intended purpose is unknown if its performance is not assessed. Accountability in the appropriate use of public funds has become a major issue in recent years. The documented success of Tech Prep programs becomes even more important as Federal funds diminish, and as state, local and private funds are sought to further develop and enhance the program.

There are various ways to assess the performance of Tech Prep programs. The performance of students, faculty, and consortium staff are assessed at appropriate intervals to determine the strengths and weaknesses of these key groups involved in Tech Prep. Based on this performance assessment information, changes are implemented in consortium and program planning to further advance the performance of these groups.

5.1 Consortia Questionnaires

Several Tech Prep consortia throughout the state of Texas already realize the importance of documenting the assessment of their performance in a variety of ways, including the assessment of the performance of consortium staff (47.7%), students (43.6%), and Tech Prep faculty (32.2%).

Almost one-third (29.2%) of the respondents to the Performance Assessment Questionnaire characterized the degree of their involvement with the performance assessment process in their consortium as either moderate or high. More than one-quarter (27.5%) participated in professional development on performance assessment, and almost one-quarter (24.2%) reported having assessed the performance of consortium staff. Less than one-fifth of the respondents indicated that they have personally participated in the following performance assessment activities with their consortium: assessed the performance of students (19.5%); served on a performance assessment committee (18.1%); or reviewed performance assessment methods in other consortium (16.1%).

5.1.1 Members Involved in Performance Assessment

Several stakeholder groups are involved in performance assessment at the consortium level. A majority of the respondents to the Performance Assessment Questionnaire indicated that the consortium director (58.4%) is involved in performance assessment. Other groups that also are represented in performance assessment activities include: business representatives (43.2%); government representatives (40.9%); community college faculty (40.3%); community college administrators (38.3%); and high school administrators (35.6%).

The high levels of involvement of business representatives in performance assessment undoubtedly reflect in part their involvement in business and industry surveys designed to gauge their satisfaction with Tech Prep students' workplace skills. The high involvement of community college and high school administrators undoubtedly reflects their traditional responsibilities for assessing the performance of their faculty.

5.1.2 Opinions about Performance Assessment

While many activities associated with performance assessment are valued, the respondents to the Performance Assessment Questionnaire viewed three specific performance assessment activities as "very important" or "essential", including: assessing performance of

students (86.1%); assessing performance of program faculty (79.3%); and assessing performance of consortium staff (63.5%).

The importance that respondents placed on assessing the performance of students, faculty, and consortium staff underscores the significance of the performance assessment component of the theoretical model upon which this project is based. Regular feedback about performance is essential in order to know how Tech Prep programs and consortia have developed and can be further enhanced.

5.1.3 Criteria for Evaluating Effectiveness

Similarly, the respondents identified three criteria that were most commonly used, or will be used to evaluate the effectiveness of their consortium's assessment of Tech Prep student performance, including: accomplishment of planned goals (65.1%); standardized test scores (57.0%); and student competency profiles (55.0%).

The three criteria used most often in assessing the performance of faculty include: accomplishment of planned goals (58.4%); participation in professional development activities (57.7%); and the number of Tech Prep courses developed (49.7%).

The three criteria used most often in assessing the performance of consortium staff are the same as for faculty: accomplishment of planned goals (56.4%); the number of Tech Prep courses developed (55.0%); and participation in professional development activities (51.7%).

As mandated by the Carl Perkins Act, the criteria most frequently used for evaluating Tech Prep students are outcome measures. The performance of faculty and staff are much more likely to be assessed using process measures, rather than outcome measures.

5.1.4 Strategies for Assessing Performance

Respondents were asked to indicate what strategies they used in assessing the performance of students, faculty, and consortia staff. The three strategies used most often in assessing the performance of students include: assessing student learning with pre- and post-tests (58.4%); assessing with portfolios (41.6%); and evaluating knowledge about Tech Prep (41.6%).

The three strategies used most often in assessing the performance of faculty include: evaluating teaching effectiveness (61.1%); determining performance indicators (53.7%); and observing classrooms (53.7%).

The three strategies used most often by respondents in assessing the performance of consortium staff include: evaluating service to Tech Prep (57.7%); evaluating knowledge about Tech Prep (54.4%); and evaluating staff administrative effectiveness (54.4%).

The strategies for assessing performance vary from group to group, reflecting the different roles that each group plays in Tech Prep consortia.

5.1.5 Open-Ended Responses

In reviewing the respondents' comments to the open-ended question on the strengths of their consortium performance assessment process, two key factors emerge. One key factor is the involvement of business and industry in the assessment of student performance. A number of respondents commented that business and industry involvement helps to ensure that Tech Prep graduates have the skills necessary to perform effectively in the workplace. Clearly, having business and industry representatives working together on evaluating the performance of students facilitates the building of partnerships between the education and business and industry sectors. Business and industry representatives can provide invaluable feedback to help high school and community college faculty improve the performance of students graduating from Tech Prep programs.

Another key factor in effective performance assessment is having secondary and postsecondary faculty working together to provide a seamless transition between levels.

Several respondents mentioned this partnership between secondary and postsecondary faculty as a strength of their performance assessment process. This working relationship between the faculty at these two levels facilitates the tracking of student performance as they move from high school to the two-year college. Two-year college faculty can provide invaluable feedback to high school faculty about the strengths and weaknesses of their Tech Prep programs. High school faculty can use this information to strengthen their policies and practices to improve the performance of Tech Prep students entering two-year college Tech Prep programs.

5.2 Telephone Interviews

Similar to the Performance Assessment Questionnaire results, telephone interviews of exemplary Tech Prep programs' key stakeholders found that performance assessment is very important, in fact "absolutely essential" to the success of Tech Prep. From an accountability perspective, the assessment of the students' performance helps determine if the students are being given what they need or if adjustments are needed, proves if Tech Prep is making a change, and evaluates the success of Tech Prep overall.

Several different methods currently used by consortia provide evidence that the assessment of Tech Prep student performance has been successful. Certification methods which use a scaled competency-level system, along with a student's portfolio, are perceived as more relevant to businesses than high school transcripts. Students are asked to complete follow-up surveys as an indicator, and business and industry is able to provide feedback through committees.

Parents also are providing feedback, often through the teachers. A secondary school interview participant indicated that the high enrollment in their programs is due to what is offered to the students and what they can learn. An interview participant from a postsecondary school noted that the Tech Prep students are coming into postsecondary education at a higher level, as well as completing at a higher level.

It was noted that historical data can be used to assist in making informed decisions concerning the improvement of student performance assessment, fine tune the program design, and identify areas of improvement. One interview participant noted a need for more in-depth instruction of educators who are conducting the assessment, in an effort to make their assessment fair.

Although it was noted as extremely time intensive, another interview participant suggested the establishment of a database at the state level which would help consortia assess the performance among regions throughout the state. Another participant questioned the concept of standardization, however, noting the need for flexibility throughout the Tech Prep programs.

Interview participants viewed several different aspects of their assessment of Tech Prep student performance as exemplary: competency-based evaluations; pre-planning; and relationships. Competency-based evaluations provide details that are the basis of guidelines for the instructor to better assess the students. Colleges and employers also are able to look beyond a grade through the review of a student's competencies profiles. One consortium is conducting a particular interest and aptitude test on its eighth grade students to determine the student's potential. The use of this type of pre-planning is resulting in more commitment from the students, their parents, teachers and counselors.

The development of a long-term relationship with, and interest in the students' performance through high school, college and careers also is considered exemplary. One interview participant noted that for once the technology students are successful, and they indicate Tech Prep's resulting one-on-one relationship with the student makes a difference.

The assessment of Tech Prep student performance has improved the preparation of students for the workforce in several different ways, according to the interview participants. Tech Prep students are more focused and goal-oriented, and have a better understanding of the relevance of their education to their future careers. Proper assessment allows the identification of shortcomings in, and ultimately the adjustment of, the curriculum. An interview participant

from the government sector noted that as skills needed for jobs are identified and put together with the curriculum, the students are better prepared to be employed.

The measurement of Tech Prep student performance has had a positive impact on the relationships between educational sectors. Articulation agreements are further advancing among secondary and postsecondary schools, for both technical and academic courses. Postsecondary school interview participants noted that this helps to ensure that students have obtained necessary competencies to proceed to advanced courses, and also has resulted in secondary and postsecondary schools working together to reduce repetition and minimize costs. Overall, interview participants indicated that the partnerships between the educational sectors is considered to be more collaborative and global, and has helped to build a more unified educational system.

The assessment of Tech Prep student performance also has positively affected the relationship and partnerships between education and business and industry. In one consortium, a large conference of business and industry and education resulted in the signing of an alliance agreement. That consortium has become a "match-maker clearinghouse", with industry coming to them looking for employees.

Business and industry also is actively involved in identifying what should be part of the curriculum, as well as providing opportunities for students to learn on the job. One interview participant from a secondary school noted that as a result of the improved relationship, some businesses will only hire Tech Prep students.

An interview participant noted that business and industry's partnership with education as a result of the assessment of Tech Prep student performance has resulted in businesses feeling that "they have a real role, they have more to offer". Rather than just using businesses to sponsor a pizza party, as had been done in the past, businesses are now assisting with developing the curriculum and training the students.

5.3 Student Satisfaction Questionnaires

At the heart of the Tech Prep planning is a group of stakeholders who are recipients, participants, and products -- the students. One way to assess the overall performance of the Tech Prep program is to determine the level of satisfaction experienced by the Tech Prep students. Ultimately, it will be important to determine the students' level of satisfaction ***after*** they have entered into the workforce. Does Tech Prep provide them with desirable career opportunities? Does Tech Prep effectively enhance their preparation for the workforce?

At this time, the ultimate benefits of the Tech Prep program are yet to be determined. Although the program has not been in effect long enough to have many graduates of Tech Prep programs entering the workforce, it is important to determine the students' level of satisfaction at this point in time. The Tech Prep program needs to be viewed positively and successfully by the students if it intends to attract and retain students.

In an effort to determine this current level of satisfaction, a Survey of Community College Tech Prep Students was sent to postsecondary Tech Prep students enrolled in Texas two-year colleges during the 1995 Spring semester.

The students who responded to this survey ranged in age from 18 to 63 years, with an average age of 28.6 years. Many of the students (52.6%) reported graduating from high school in 1991 or before. GEDs were earned by 13.4% of the students. Only 9.0% of the students graduated in 1993 and 9.6% in 1994. Clearly, the perspectives arising from this survey reflect the responses of a more mature cohort.

In looking at factors that are often used to determine socio-economic status, the questionnaire asked about parental educational levels. More than half of the students were first generation attendees at postsecondary institutions, with 54.0% of their fathers and 55.0% of their mothers completing high school or less. Several students reported that their parents had completed grade school or less (fathers, 15.1%; mothers, 10.5%).

Major motivations for being enrolled in the Tech Prep programs included: receiving an associate's degree (59.0%); obtaining a certificate (12.0%); or satisfying job-related/job-

required needs (7.0%). Overwhelmingly, these students are strongly committed to their Tech Prep programs, with 97.0% indicating that they expected to complete their chosen programs. In addition, more than half of the students noted an express purpose of receiving an associate's degree.

5.3.1 External Involvement

Many of the students are involved outside the mainstream of the college experience. This finding is not unexpected given the age and experience indicated by many students. In keeping with the age and life experience of this cohort, it was not surprising to find that most of these students worked away from the institutions in which they were enrolled.

Sixty percent (60.0%) of the students were employed, with 15.4% working 40 hours or more each week, and 23.0% of the students working more than 20 hours each week. The majority of the students (52.6%) worked off campus. Of those employed, 57.4% worked in positions that were not related to their chosen Tech Prep career area.

5.3.2 Program Involvement

Many of the students responding to this Survey of Community College Tech Prep Students actually had ***not*** participated in an extended Tech Prep program. A major portion of these students entered community college Tech Prep programs after working (48.0%) or participating in other postsecondary activities (18.8%). Only 28.2% entered the 2-year postsecondary Tech Prep program directly from high school, without other work, college or military experience. Of those entering from high school, only 9.8% reported entering from a high school Tech Prep program. Of the 25.0% who responded that they had received credit for or exemption from courses, only 7.0% received credit from a high school Tech Prep program. The students who responded to this survey are not what many would define as a 'Tech Prep' student because these students have not been involved in a 2+2 nor a 4+2 program.

The most frequently mentioned Tech Prep program affiliations of the students were: health professions (32.0%); engineering related technologies (25.4%); and office systems technology (10.2%). These students were involved in rapidly changing, high technology fields identified for rapid job market growth.

Most of the students (65.2%) declared themselves to be full-time students, i.e. enrolled in 12 or more hours of coursework. These students were involved in lab/clinical time and class/lecture time. Forty percent (40.0%) spent 1 to 6 hours, and 23.8% spent 7 to 12 hours in attendance in labs each week. In looking at hours of time spent in class, 32.2% attended class from 1 to 6 hours, and 42.0% spent 7 to 12 hours each week.

These students had completed a diverse number of courses [see Table 1]. The students were at a variety of stages in their programs.

Table 1: Postsecondary Courses Completed

Number of courses	Percent Completed
none	19.0
1-4	24.2
5-8	11.4
9-15	14.0
16-20	7.2
over 20	20.6

5.3.3 Students' Perceived Preparation

These students perceived themselves as being prepared either to enter the workforce, or to continue for a 4-year degree [see Table 2]. The majority of students either agreed or

strongly agreed with queries concerning their preparation for the workforce (more than 90%), and their preparation for a 4-year degree (more than 70%).

Table 2: Perceived Preparation

	Agree or Strongly Agree %
After vocational coursework completed will be:	
prepared to enter workforce	91.4
prepared to continue for a 4-year degree	71.0
After academic preparation completed will be:	
prepared to enter workforce	90.4
prepared to continue for a 4-year degree	70.4

Related to the students' perceived preparation is an intermediate outcome of their involvement with the Tech Prep program -- the students' grade point averages (GPAs). Almost three quarters of the students (73.2%) reported GPAs of 2.50 or higher on a four point scale, and 24.0% reported GPAs of 3.50 or higher. These GPAs reflected the dedication of the students to their career choices in these Tech Prep programs.

5.3.4 Vocational Satisfaction

The students were asked to respond to 14 questions concerning their satisfaction with vocational/Tech Prep instruction and curriculum. Almost all of the students were satisfied or very satisfied with many aspects of their vocational programs [see Table 3].

Table 3: Satisfaction with Vocational/Tech Prep Curriculum and Instruction

	Satisfied or Very Satisfied %
Vocational Instructors' Knowledge of Field	96.0
Vocational Instructors' Varied Teaching	93.0
Vocational Instructors' Ability to Relate to Students	92.6
Vocational Instructors' Availability Out of Class	88.2
Quality of Vocational Instruction	92.2
Vocational Course Sequencing	87.8
Vocational Course Objectives	94.6
Vocational Course Content	92.6
Balance of Theoretical and Practical	91.8
Academic Content in Vocational Coursework	90.2
Balance of Class and Laboratory Time	88.6
Laboratory/Workshop Space	84.2
Available Equipment	81.4
Job Sites for Clinicals or Internships	68.4

The only aspect that received satisfaction by less than 80% of the students was the item related to job sites for clinicals or internships. Although 68.4% of the students indicated that they were either satisfied or very satisfied with job sites for internships or clinicals, this level of satisfaction was noticeably lower than the level of satisfaction with other aspects of the vocational/Tech Prep curriculum and instruction. Remembering, however, that 56.6% of the students had completed fewer than 9 classes in the Tech Prep program brings this lower satisfaction rating into perspective. With fewer than nine classes completed, many of the students were not far enough into their program to be working in an internship or clinical

situation. Also contributing to the satisfaction disparity was that close to 60.0% were employed in positions not related to their Tech Prep program area. Almost a quarter of the students (22.8%) indicated that this item was not relevant at this time. Only 7.8% of the students were dissatisfied, and only 1.0% were very dissatisfied with the job sites for clinicals or internships.

5.3.5 Academic Satisfaction

As with vocational satisfaction measures, students were asked to respond to nine questions items concerning their satisfaction with academic facets of the Tech Prep program. Again, cumulative responses indicated that more than 87.0% of the students were either satisfied or very satisfied with all of the identified aspects of their academic programs [see Table 4]. Clearly, the current Tech Prep students were satisfied with the academic component of the existing Tech Prep program.

Table 4: Satisfaction with Academic Component of Tech Prep Program

	Satisfied or Very Satisfied %
Academic Instructors' Knowledge of Field	91.8
Academic Instructors' Varied Teaching	90.2
Academic Instructors' Ability to Relate to Students	88.4
Academic Instructors' Availability Out of Class	87.0
Quality of Academic Instruction	91.0
Academic Course Objectives	90.6
Balance of Theoretical and Practical	87.8
Voc/Tech Applications in Academic Coursework	88.2
Academic Course Content Relevant to Career	88.2

5.3.6 Overall Satisfaction

Questions were included to identify the overall student satisfaction with the Tech Prep program in Texas. The responses were a resounding YES! When asked "If you could start over, would you take this vocational/Tech Prep program again?", 91.2% of the students indicated that they would take the same program over again, and 92.0% would recommend the program to a friend.

In describing their satisfaction with the overall environment, 95.0% of the students were either satisfied or very satisfied. They also were satisfied, both vocationally (88.2%) and academically (88.2%) with their preparation to enter the workforce. In considering their preparation to continue for a 4-year degree, 85.6% of the students were satisfied vocationally with their preparation to continue, and 83.6% were satisfied academically. Remembering that most of these students were in early stages of their programs, with 9 or fewer classes, the level of satisfaction with their preparation should increase as their length of exposure to the Tech Prep program increases.

5.4 Exemplary Assessment of Performance

Consortia with exemplary policies and practices in the assessment of performance exhibit the following common characteristics:

- The performance of Tech Prep students, faculty and consortium staff is assessed in outcomes that provide direct feedback for program and personal improvements.

- Community college faculty provide feedback to high school faculty about academic and vocational performance of their Tech Prep graduates.
- Business and industry representatives provide feedback to high school and community college faculty about the work place performance of their Tech Prep graduates.
- Developing partnerships with stakeholders is a primary strategy in assessing the performance of Tech Prep students, faculty and consortium staff.
- Consortia assess their Tech Prep students' satisfaction with their preparation to enter the workforce or to continue with postsecondary education.
- The accomplishment of planned goals is the primary criterion for assessing the performance of students, faculty and consortium staff.

Chapter 6

Ideas for the Future

The future of Tech Prep programs ultimately rests on the vigilance of stakeholder groups in promoting the importance of Tech Prep, and in stakeholder commitment of time, energy, and resources in further developing these programs. These characteristics will become even more essential as the federal funding to Tech Prep and School to Work programs decreases or is eliminated. Based on our analyses of documents, questionnaires, and interviews, we believe that Tech Prep has had a significant positive impact on educational reform in the state of Texas, and is most deserving of continued support by state and federal funds. Perhaps the most significant contribution that Tech Prep has made is in enhancing and promoting cooperation and partnerships between and within sectors. Tech Prep has given high schools and community colleges across Texas a compelling reason to cooperate and share ideas and information to improve vocational/technical education. Tech Prep consortia have provided mechanisms for enhancing the involvement of business and industry, labor, and government in the improvement of workforce education in Texas. This type of cooperation and sharing of information between and within sectors is proving to be a powerful model for improving education within the state.

From our vantage point, several additional developments are necessary to take Tech Prep and School to Work programs to an even higher level of equity, excellence, and efficiency. We will address these potential developments in the sections that follow.

Equity

Texas has made great strides in ensuring access to Tech Prep through the establishment of 25 Tech Prep consortia, scattered across the state. Each consortium has the autonomy to develop the Tech Prep programs that best meet the labor force needs of their local area. This local autonomy has resulted in innovative Tech Prep programs, but at the expense of any standardization of curricula and performance standards across the state. This lack of standardization in curriculum and performance creates problems for Tech Prep students attempting to transfer credits between institutions. The state needs to take steps to standardize curricula and performance standards, so that students can more easily transfer credits between institutions. Work presently underway at the state level to develop skills standards for each occupational program should help to set performance standards for occupational programs throughout the state. Developing a common course numbering system for all occupational/vocational courses taught at the postsecondary level would also greatly ameliorate transfer problems for Tech Prep students.

Tech Prep consortia also need to develop strategic partnerships with each other, in much the same way that individual consortia have developed partnerships of local business and industry, labor, and government representatives with secondary and postsecondary school representatives. Some consortia, notably Alamo Tech Prep and Middle Rio Grande Tech Prep, have already begun articulating programs and allowing students to move across consortia boundaries to enroll in desired programs and internships. There needs to be many more of these types of regional partnerships established between Tech Prep consortia to better serve the needs of Tech Prep students in Texas. As federal funding for Tech Prep and School to Work Consortia decreases or is eliminated, Tech Prep consortia are going to be forced to be much more creative in pooling their resources and developing regional partnerships to help support their Tech Prep programs. Developing regional partnerships between consortia will provide Tech Prep students more equality of opportunity to pursue the Tech Prep program of their choice.

Excellence

Local autonomy has allowed Tech Prep consortia to develop creative Tech Prep policies and practices that capitalize on the expertise and resources of their areas. Based on our analyses for this project, we found that many consortia have developed exemplary policies and practices in the areas of strategic planning, curriculum evaluation, and performance assessment. Some of these exemplary policies and practices are shared formally between Tech Prep consortium directors at the Tech Prep Directors Association meetings or informally by phone or site visits. However, there are relatively few formal mechanisms where Tech Prep consortium directors and members can share with one another exemplary policies and practices in an ongoing manner. The creation of this handbook is seen as one way of remedying this situation, by disseminating exemplary policies and practices in strategic planning, curriculum evaluation, and performance assessment to a statewide audience of individuals involved in Tech Prep.

However, a process of continuous sharing of best policies and practices is necessary among consortia if Tech Prep programs are to continue to strive for excellence. Directors and members need to visit one another's Tech Prep consortia on a regular basis to share with one another best policies and practices. A statewide newsletter sharing new developments in Tech Prep consortia across the state would also allow for continuous dissemination of information between consortia. The more sharing of information among consortia, the more likely it is that individual consortia will be exposed to creative policies and practices to improve upon their excellence.

There also needs to be more regional partnerships developed among consortia to capitalize on each local area's expertise and resources. Why not have regional Tech Prep consortia enter into cooperative agreements allowing students to attend whichever regional consortium specializes in the career pathway of their choice? Tech Prep consortia in such a regional partnership might agree to pool their resources and develop a formal division of labor, whereby each consortium develops excellence in a particular career pathway. Clearly, there are a number of creative ways that regional Tech Prep consortia can work with one another to improve the excellence of the Tech Prep system statewide in the best interest of students.

Efficiency

In an era of declining federal resources in support of vocational/technical education, finding ways to do more with less is a pressing concern for all Tech Prep consortia. One of the clear advantages of developing regional partnerships between Tech Prep or School to Work consortia is that it allows consortia to pool their resources and to capitalize on economies of scale. The state needs to develop financial incentives to encourage such regional cooperation between consortia in helping to develop a statewide system for developing the workforce. The costs of incentives to encourage such regional cooperation between consortia would be more than offset by the savings to the state in the reduction of duplication in programming and the increased ease of student transfer between institutions.

Efficiency can also be promoted at the state level by developing a common course numbering system for vocational/technical courses at the postsecondary level. Such a common course numbering system would greatly ease the transfer of credits between institutions, reducing the need for the state to pay institutions twice when Tech Prep students have to repeat a vocational/technical course. Having a common course numbering system would also enable the state to more easily identify regional programs that might benefit from pooling resources and sharing expertise and information.

Efficiency can also be promoted by developing statewide standards for performance for specific Tech Prep occupational programs. Rather than having each of the twenty-five consortia attempt to develop their own skill standards for these occupations, it is far more efficient for the state to develop the standards for Tech Prep occupations. Having the state set the performance standards for each Tech Prep program frees up resources at the consortium level for other purposes, and greatly facilitates student transfer between Tech Prep programs.

The Need for Partnerships

The project investigators have found that many Tech Prep consortia have developed exemplary policies and practices in strategic planning, curriculum evaluation, and performance assessment. There are additional steps that we feel need to be taken to move consortia to a higher level of excellence in these areas. A continuous program of professional development in these areas is an excellent way to develop the expertise of members within each consortium. Not only does the Tech Prep director need to be knowledgeable in these areas, but so do a wide range of members representing secondary and postsecondary schools, as well as business and industry, labor, and government representatives. Developing the expertise of such a wide range of members will require a continuous cycle of professional workshops in strategic planning, curriculum evaluation, and performance assessment. Consortia might consider developing regional professional development partnerships to make available such workshops on a regular basis to their consortium members.

Consortia might also develop evaluation partnerships as a way of achieving economies of scale and expert assistance in evaluating their curricula and assessing the performance of students. As an example, consortia might bring together vocational and academic area experts from around the region to develop standards for developing and evaluating curricula in vocational and applied academic courses or programs. Pooling expertise and resources in such a fashion would spread the costs of developing and evaluating Tech Prep courses and programs over a number of consortia and would lead to greater standardization of curricula and performance standards across the state. In a similar fashion, regional consortia might bring together vocational and academic area experts to design standardized methods for measuring the development of Tech Prep student talent in vocational and academic areas. Such methods would help standardize the assessment of student performance across the state and would provide important comparative feedback to consortia members interested in improving the effectiveness of their Tech Prep programs.

The project investigators believe that the Tech Prep approach to educational reform has made a significant positive impact on the educational system in Texas. The primary policy recommendation that we advocate is to take the concept of partnership to a regional level of aggregation. Much has already been accomplished by developing local partnerships between secondary and postsecondary schools working in cooperation with the local business and industry, labor and government sectors. Much more can be accomplished if the concept of partnership is applied at a regional or statewide level to develop a truly world-class system of workforce development in the state of Texas.

Appendix A

Tech Prep Consortia and Directors in Texas

Tech Prep Consortia and Directors in Texas

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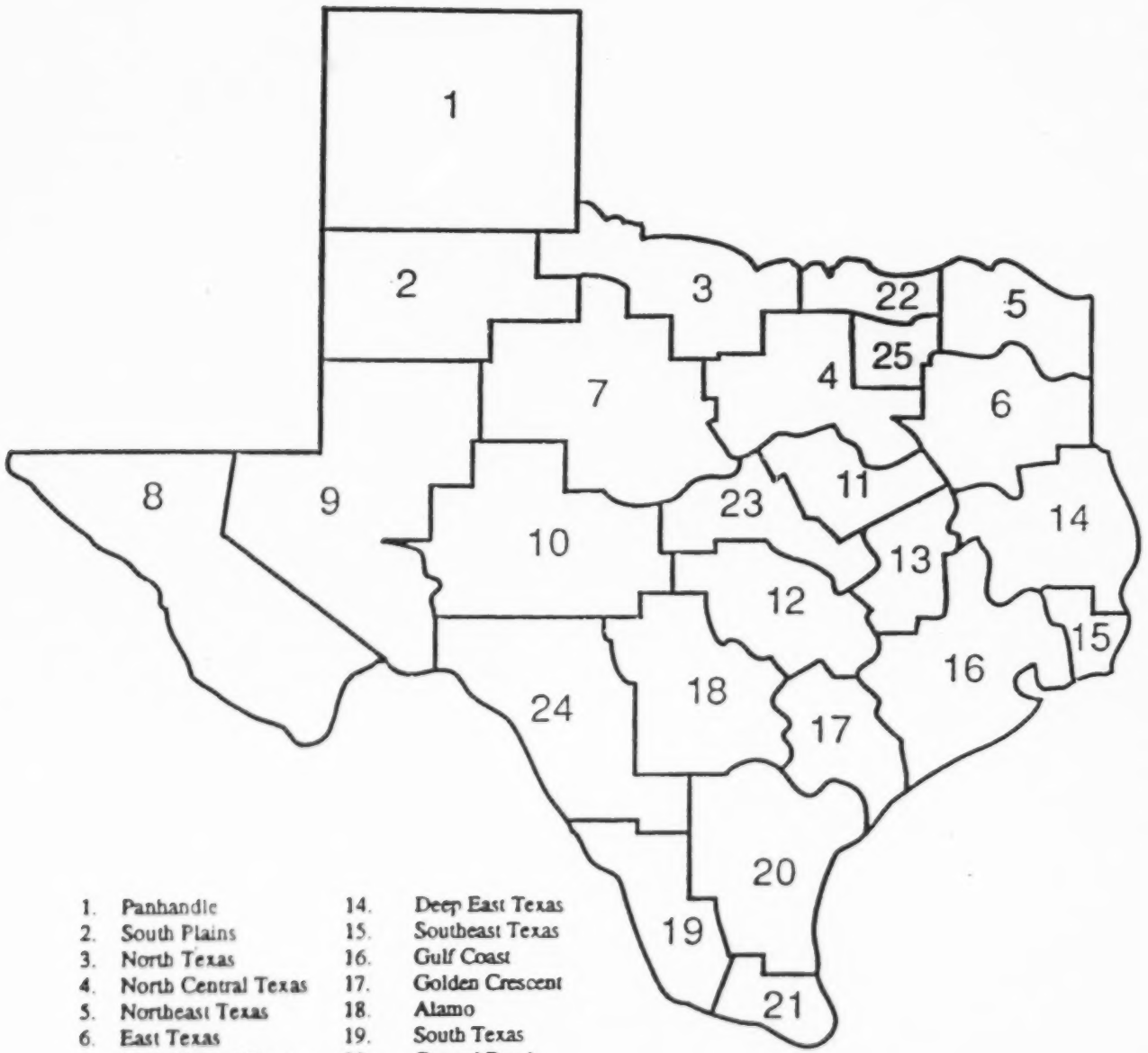
Appendix B

Map of the Tech Prep Consortia

Texas Tech Prep Consortia



1. Panhandle
2. South Plains
3. North Texas
4. North Central Texas
5. Northeast Texas
6. East Texas
7. West Central Texas
8. Upper Rio Grande
9. Permian Basin
10. Concho Valley
11. Heart of Texas
12. Capital
13. Brazos Valley
14. Deep East Texas
15. Southeast Texas
16. Gulf Coast
17. Golden Crescent
18. Alamo
19. South Texas
20. Coastal Bend
21. Lower Rio Grande
22. Texoma
23. Central Texas
24. Middle Rio Grande
25 Global Edge